

**ON FIRST RECORD OF A NEW DIGENEAN TREMATODE OF GENUS
HYPOHEPATICOLA YAMAGUTI, 1934 FROM MARINE FISHES FROM BAY
OF BENGAL, PURI ODISHA (INDIA)**

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ABSTRACT

*A new hemiurids digenean, *Hypohepaticola garua* sp. nov., is described from specimens recovered from the Liver of the *Pseudeutropius garua* (Day), from Bay of Bengal, Puri, Odisha. The new species is characterized by having genital pore at the level of intestinal bifurcation instead of mid level of pharynx and vesicular seminalis saccular instead of tubular and in relative shape and size of various organs. This new species represents the first record of member of the genus *Hypohepaticola* Yamaguti, 1934 parasitizing marine fish *Pseudeutropius garua* (Day), from Bay of Bengal, Puri, Odisha. A key is presented for the species currently recognized as valid in the genus. Thus on account of above-mentioned differences as against all those described earlier, the present form deserves the status of a new species.*

KEYWORDS: Marine fish, Digenetic Trematodes, Infection

INTRODUCTION

Genus *Hypohepaticola* (Trematoda: Hemiuridae) is one of the most important digenean with wide geographic distribution in the world (Sushma Mishra, Satish Chandra & A.M. Saxena, 2013). Fishes carry heavy infection of helminth parasites and serve as the host of different helminth parasites. Marine fishes are the common shelter for various species of digenetic trematode parasites. Infection of these parasites may be result in poor growth, postpone sexual maturity and mortality of fishes, and cause human and animal diseases due to weak association of host and parasites. In this paper we are adding the knowledge of *Hypohepaticola* especially of marine teleost fishes from the coast of Puri, Odisha (India). During the survey of helminth parasites, collected one different species of the genus *Hypohepaticola* and others are found rediscrbed.

MATERIALS AND METHODS

During the examination of the marine fish specimens of the above genus were recovered from the liver of marine fish *Pseudeutropius garua* (Day). The specimens were collected and identified by standard fish books and cut open and thoroughly examined after that helminthes parasites were separated in Petri dish containing normal saline solution. The parasite were flattened with slight pressure of cover glass and fixed in A.F.A. fixative (50% alcohol, formalin and acetic acid in ratio of 100: 6: 2.5). They were stained in acetoalum carmine, differentiated in acid alcohol and dehydrated through ascending grade of alcohols. These were cleared in xylol and mounted in canada balsam or DPX. The diagrams were made with the help of camera Lucida. All the measurements in millimeters: unless otherwise stated.

RESULTS AND DISCUSSIONS

Family: Hemuridae Luhe, 1909

Subfamily: Hypohepaticolinae Yamaguti, 1958

***HYPOHEPATICOLA GARUAI* SP. NOV.**

Description: (Figure 1.1: Entire Ventral View of Adult; Figure 1.2: Enlarge Eggs)

Body elongated without tail, no cuticular denticulations, 3.95 – 2.45 mm long, 2.02 – 1.95 mm wide. Oral sucker sub-terminal, sub-spherical, 0.24 – 0.20 mm long, 0.28 – 0.29 mm wide. Pre-pharynx absent. Pharynx ovoid, muscular 0.12 – 0.13 mm long, 0.10 – 0.11 mm wide. Oesophagus absent. Intestinal caeca extending up to posterior part of body. Ventral sucker spherical equatorial larger than oral sucker, 0.65 – 0.66 mm long, 0.64 – 0.65 mm wide, at 1.59 mm from anterior extremity.

Excretory bladder tubular; excretory pore terminal. Genital pore median, at the level of intestinal bifurcation at 0.45 mm from anterior extremity. Testes two oval, symmetrical, post-acetabular, pre-ovarian. Right testis 0.24 – 0.24 mm long, 0.22 – 0.23 mm wide, at 2.22 mm from anterior extremity. Left testis 0.15 – 0.19 mm long, 0.22 – 0.25 mm, at 2.26 mm from anterior extremity. Vesicula seminalis antero dorsal to acetabulum 0.30 – 0.26 long, 0.15 – 0.18 mm wide. Pars-prostatica 0.10 – 0.11 mm long, 0.02 – 0.05 mm wide, surrounded by a large number of prostate gland cells. Ductus hermaphroditicus long, tubular, open into genital atrium.

Ovary sub-median post-equatorial, post-testicular, oval situated below right testis, 0.26 – 0.28 mm long, 0.30 – 0.37 mm wide, at 2.05 mm from anterior extremity, receptaculum seminis post-ovarian, 0.09 – 0.14 mm long, 0.10 – 0.12 mm wide, at 2.79 mm from anterior extremity. Vitellaria consisting of tubules, extending from mid level of ovary up to little before to caecal ends. Uterine coil not reaching to posterior extremity. Eggs oval small, numerous, non-operculated, 0.011 – 0.013 mm long, 0.005 – 0.006 mm wide.

Type host : *Pseudeutropius garua* (Day)

Type locality : Bay of Bengal, Puri, Odisha.

Site of infection : Liver

Prevalence : Two specimens from two hosts, out of forty examined.

Etymology : The specific name based on the host name, *Pseudeutropius garua*.

RESULTS

The present form belongs to genus *Hypohepaticola* Yamaguti, 1934 comprises following species viz. *Hypohepaticola callionymi* Yamaguti, 1934 and *Hypohepaticola equali* Mishra et al, 2009 are known so far.

The present form closely resembles with *H. callionymi* and *Hypohepaticola equali*, in absence of pre-pharynx; ovoid and muscular pharynx; intestinal caeca reaching to near posterior extremity; acetabulum larger than oral sucker; vitellaria of seven short winding tubules; postovarian receptaculum seminalis and testes post-acetabular.

The present form differs from *H. callionymi* in ventral sucker equatorial instead of pre-equatorial; testes post-equatorial instead of equatorial and also differs from *Hypohepaticola equali* it in having oral sucker sub-terminal instead

of terminal; absence of oesophagus instead of long, tubular oesophagus. Ventral sucker equatorial instead of pre-equatorial and excretory pore Y-shaped instead of tubular.

However the present form further differs from both of above forms it in having genital pore at the level of intestinal bifurcation instead of mid level of pharynx and vesicular seminalis saccular instead of tubular and in relative shape and size of various organs. Thus on account of above mentioned differences as against all those described earlier, the present form deserves the status of a new species.

***HYPOHEPATICOLA CALLIONYMI* YAMAGUTI, 1934**

Redescription (Figure 2.1: Entire Ventral View of Adult; Figure 2.2: Enlarge Eggs)

Body fusiform or elongated without tail, no cuticular denticulation, 3.10 – 5.18 mm long, 1.03 - 2.10 mm wide. Oral sucker sub-terminal, sub-spherical, 0.18 – 0.37 mm long, 0.26 – 0.44 mm wide. Pre-pharynx absent. Pharynx mucular, ovoid 0.10 – 0.17 mm long, 0.10 – 0.18 mm wide. Oesophagus absent. Intestinal caeca extending up to posterior part of body. Ventral sucker spherical larger than oral sucker, 0.50 – 1.00 mm long, 0.49 – 1.50 mm wide, at 1.00 – 1.23 mm from anterior extremity. Excretory bladder 'Y' shaped; excretory pore terminal. Genital pore sub-median at mid level of pharynx or on right intestinal caeca, at 0.40 – 0.52 mm from anterior extremity. Testes two symmetrical or diagonal, oval, post-acetabular, one on each side of acetabulum. Right testis 0.27 – 0.50 mm long, 0.24 – 0.38 mm wide, at 1.63 - 2.14 mm from anterior extremity. Left testis 0.20 – 0.52 mm long, 0.35 – 0.45 mm wide, at 1.55 – 2.27 mm from anterior extremity. Vesicula seminalis saccular, anterodorsal to acetabulum, constricted at middle, 0.20 – 0.52 mm long, 0.13 – 0.20 mm wide. Pars-prostatica 0.10 – 0.20 mm in length. Ductus hermaphroditicus opening in to genital atrium, 0.10 - 0.10 mm long, 0.01 – 0.03 mm wide.

Ovary sub-median, oval, post equatorial, post-testicular 0.22 - 0.34 mm long, 0.43 - 0.58 mm wide, at 1.90 - 2.77 mm from anterior extremity. Receptaculum seminis post ovarian 0.39 – 0.40 mm long, 0.38 – 0.42 mm wide. Vitellaria consisting of short tubules, uterine coil not reaching to posterior extremity. Eggs oval, small, numerous, non-operculated, 0.01 - 0.01 mm long, 0.01 - 0.01 mm wide.

Type host : *Gazza minuta* (Bl.)

Type locality : Bay of Bengal, Puri, Odisha.

Site of infection : Liver

Prevalence : Three specimens from two hosts, out of forty examined.

RESULTS

The present form belongs to *Hypohepaticola callionymi* Yamaguti, 1934 but differs from it in having extension of intestinal caeca and uterus and in relative shape and size of various organs. These differences are considered as individual specific variations within the species.

CONCLUSIONS

We have recovered a new species with the specific name *Hypohepaticola garuui* sp. nov. from host *Pseudeutropius garua* (Day) and a redescription of *Hypohepaticola callionymi* Yamaguti, 1934 from host *Gazza minuta* (Bl.) but this species differs from it in having extension of caeca and uterus and in relative shape and size of various

organs. These differences are considered as individual specific variations within the species.

Key to species of *Hypphepaticola* Yamaguti, 1934

- Ventral sucker pre-equatorial2
- Ventral sucker equatorial.....3
- Vesicula seminalis tubular.....4
- Vesicula seminalis saccular.....5
- Oesophagus long, tubular and genital pore at mid level of pharynx.....*Hypphepaticola equuali* Mishra et al, 2009
- Oesophagus absent and genital pore present at mid level of pharynx... *Hypphepaticola callionymi* Yamaguti, 1934
- 3. & 5. Oesophagus absent and genital pore present at intestinal caeca.....*Hypphepaticola garuaiti* sp. nov.

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APPENDICES

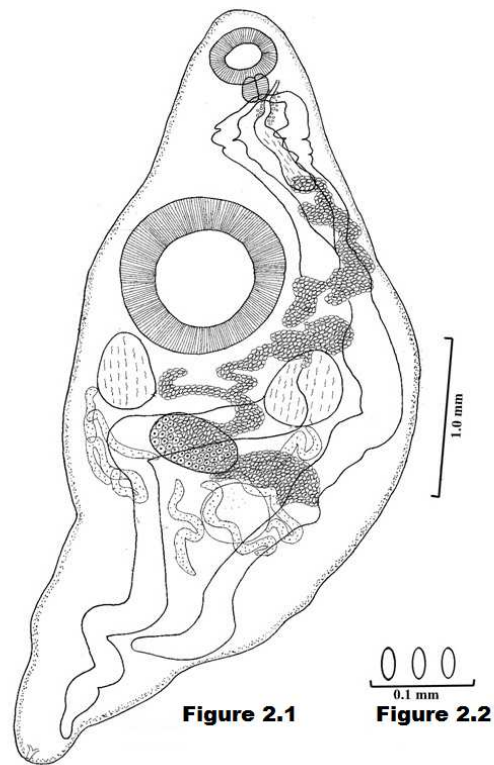


Figure 2.1 & 2.2: *Hypohepaticola callionymi* Yamaguti, 1934

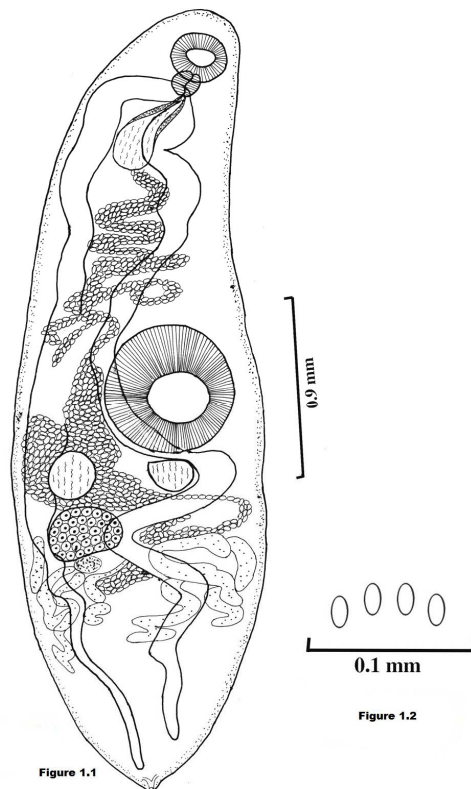


Figure 1.1 & 1.2: *Hypohepaticola garuui* sp. Nov

